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FILE:

PORTABLE W₂ GEN

28 August 1957

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Attention: [REDACTED]

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Dear [REDACTED]

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After reviewing your proposal entitled, "A Gas Generator for Balloon Inflation" it appeared to us that we should compare what you have proposed to existing equipment. We feel that such a comparison is valid in view of the existence of a generator which utilizes ammonia as the source of a hydrogen-nitrogen mixture. In addition, the gas production rate of this generator is approximately equivalent to the rate we would need for a one-man inflation situation. The weight of this generator and associated equipment is approximately 5-1/2 tons. Considering this fact, we feel that possibly your people have not investigated the problems which might be involved in effecting the dissociation of ammonia in a simple, controllable, lightweight, and safe system. Also, we feel that the staging of the hydrazine reactor to the ammonia system would pose additional difficulties which could lead to a gross weight in excess of our requirements.

These considerations lead us to believe that a feasibility study of the "hydrazine generator" cannot be justified until further investigation of some of the more obvious potential difficulties is made. Therefore, we would suggest that if your group desires, they contact [REDACTED] the manufacturers of the existing generator. We must ask, however, that for security reasons any inquiries be limited to those of a technical nature and that any interest on the part of the government in the generation of lifting gas or balloons be neither revealed nor implied.

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To enable you to understand our needs more thoroughly, I have specified below characteristics which we feel the generator should have.

- (1) It should be capable of producing enough gas to lift 250 pounds.
- (2) This quantity of gas should be produced in not less than 20 minutes and not more than 60 minutes. The optimum rate of gas generation would result in an inflation time of 30 minutes.

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- (3) Satisfactory functioning should be independent of ambient temperature from -10°F to 100°F .
- (4) The temperature of the off-gas should be not greater than 30°F in excess of the ambient temperature.
- (5) The gross weight of the generator including chemicals should be not greater than 250 pounds. It is recognized that 98 pounds of ammonia or 136 pounds of hydrazine are necessary to obtain the required lift.
- (6) The generator should be capable of being broken down into components weighing not more than fifty pounds each.
- (7) It should be capable of operation by one non-technical man.
- (8) It should be simple, fool-proof, and have safety controls which would preclude dangerous operation through gross human errors.
- (9) Due precautions must be exercised in the selection of materials and chemicals and in the preparation of the operating instructions to eliminate potentially explosive or toxic conditions.
- (10) All components and chemicals must be designed for safe storage and shipment without inspection or attention for periods of up to 12 months. The generator should be designed for a single operating period, with recharging and reuse not contemplated.
- (11) The generator should be completely self-contained and not require any auxiliary equipment or materials.
- (12) The cost of the generator including chemicals should not exceed \$1500.00.

I hope the above adequately outlines our thinking on this problem. We appreciate your interest and will be happy to consider a proposal which would point out your conclusions resulting from an investigation of current practice.

Sincerely,



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P.S. I should mention that will be handling the generator problem and that any future inquiries or comments would best be directed to them.

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